

## **Cost/Benefit Analysis of Absorbent Recycling Utilizing Oil Extraction Vs. Solid Fuel Blending**

1. **History.** With the adoption in 1997 of the Wisconsin Administrative Code, Chapter 590, the Wisconsin Army National Guard started to segregate and collect oil contaminated absorbents for recycling in accordance with Department of Natural Resources recommendations contained in WAC section 590.05, (2), (b).

a. Because recycling options were limited at the time, the WIARNG utilized the services of the State of Wisconsin's hazardous waste contractor to pickup these materials from 1997 through 2000. They were taken to a cement kiln facility and utilized in solid fuel blending.

b. Early in year 2001, the WIARNG became aware of a new vendor for recycling used absorbents, CRI Recycling Inc. This vendor uses a unique extraction process whereby oils and greases are removed from the absorbents. Absorbent materials are then reissued as useable absorbent or utilized as raw materials (polypropylene) in the manufacture of various plastic products.

c. A cost comparison done at the time indicated that the WIARNG could realize an annual saving of approximately \$8,000.00 in disposal (recycling) cost. Additional services provided by the vendor included the following;

1) The ability to accept other wastes that lend themselves to their treatment process such as used oil & fuel filters and drum quantities of petroleum contaminated soil.

2) The inclusion of replacement absorbent materials as a standard feature of the service when drums of used absorbent are picked up.

2. **Cost Comparison.** A comparison of the costs associated with solid fuel blending vs. oil extraction revealed some significant savings in per drum costs.

a. Solid fuel blending is performed on a cost per pound basis.

1) On the average, a drum of used pads, pillows and socks cost approximately \$350.00 to recycle.

2) A drum of used floor dry, due to the weight of clay, could cost as much as \$700.00 to recycle.

3) The vendor charges for mobilization to the pickup site. These mobilization charges average \$322.00 per pickup at WIARNG facilities.

4) The vendor did not include replacement absorbents as part of the solid fuel blending recycling service.

b. Oil extraction is performed on a cost per drum basis.

1) A drum of used pads, pillows and socks cost \$250.00 to recycle.

- 2) A drum of used floor dry costs \$200.00 to recycle.
- 3) The vendor does not charge for mobilization.
- 4) The cost of supplying replacement absorbent materials is included in the service price.

3. **Actual Costs.** For the purposes of this report, the WIARNG utilized recycling numbers (# of drums) from calendar year 2001. A comparison was made using cost figures from the two recycling vendors in question.

a. Solid Fuel Blending.

- 1) Cost of recycling 6,900 Lbs. (34.5 drums) of used pads, pillows & socks, \$12,075.00.
- 2) Cost of recycling 5,800 Lbs. (14.5 drums) of floor dry, \$10,150.00.
- 3) Mobilization charges (to get vendor to the site), \$3,220.00.
- 4) Cost of procuring replacement absorbent through the federal supply system, (estimated) \$3,885.00.
- 5) Total cost for 2001 service using solid fuel blending, \$29,330.00.

b. Oil Extraction.

- 1) Cost of recycling 34.5 drums (6,900 Lbs.) of used pads, pillows & socks, \$8,625.00.
- 2) Cost of recycling 14.5 drums (5,800 Lbs.) of floor dry, \$2,900.00.
- 3) Mobilization charges, \$0.00.
- 4) Cost of procuring replacement absorbent through the federal supply system, \$0.00.
- 5) Total cost for 2001 service using oil extraction, \$11,525.00.

4. **Annual Savings.** The saving realized in the first year of oil extraction service is fairly significant when compared to what would have been to recycle the material via solid fuel blending. **By simple subtraction, the total cost savings for calendar year 2001 amounted to \$17,805.00.** Numbers for absorbent recycling services provided in calendar year 2002 will be available by March 1, 2003.

5. **Additional Benefits.** There are additional benefits associated with the oil extraction service. These benefits help offset additional costs associated with WIARNG operations.

a. The vendor is able to accept other waste materials for recycling and disposal, including used oil & fuel filters and drums of contaminated soil. By accepting these other waste materials, the vendor helps to minimize confusion and administrative costs associated with having to deal with multiple vendors. In most cases, the vendor can just pick up these other waste items when they are already on-site to get the used absorbents.

b. The inclusion of replacement absorbents as a component of the service has helped the WIARNG keep its spill response and cleanup kits replenished on a consistent basis. This is due to the fact that supply personnel at the shop and unit level do not have to remember to place a separate order for restock materials. In addition, replacement

absorbents can be supplied to the unit level by each supporting Organizational Maintenance Shop when unit personnel turn-in their used absorbents.

c. In the days when we were paying by the pound to recycle drums of granular clay absorbents (floor dry), the disposal cost were prohibitive and shops were strongly encouraged to end or minimize their use of this type of absorbent material. With the per drum pricing scheme of the oil extraction vendor, the cost associated with the recycling of used granular clay absorbents are no longer a limiting factor. Granular clay absorbents are once again acceptable for use at WIARNG maintenance shops and other facilities.

d. Because of the destructive nature of solid fuel blending, this treatment method does not meet the federal government definition of a recycling activity. In order to meet the goals of affirmative procurement of the federal government, return of a useable recycled product must be included in the service. This is a feature of the oil extraction technology. Because recycled absorbent materials are returned to the customer as a standard feature of the service, this treatment methodology does meet the federal government definition of affirmative procurement.